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saving from extinction grouse, ptarmigan and water fowl in certain sections, while the law against spring shooting is generally respected.

The New Jersey Audubon Society has issued an attractive annual report,¹ devoted especially to the Junior Audubon class work.— W. S.

A Beginning of Philippine Economic Ornithology.— Mr. Richard C. McGregor, Ornithologist of the Philippine Bureau of Science has undertaken the study of the economic value of birds in the Philippines, in which work he has the support and coöperation of the Agricultural Congress. A circular requesting information has been issued, accompanied by a card upon which the data can be entered. There has been published also a press bulletin² intended to arouse interest in the work. This publication illustrates some common types of Philippine birds, and contains general notes on the food of many species, and specific data on a few.

It is to be hoped that good progress can be made on the elucidation of the economic ornithology of the Philippines, and that the results in rational protection of birds will be satisfactory.— W. L. M.

Collinge's 'Some Observations on the Rate of Digestion in Different Groups of Wild Birds.'— Under this caption, Professor Walter E. Collinge summarizes³ the investigations of other workers, and presents the results of his own studies on rate of digestion in the Rook, Starling, and House Sparrow. The various findings agree very well that the contents of the stomach are completely digested in about four hours. From this it would seem that the human plan of three meals a day must be largely prevalent among birds. The reviewer has presented evidence⁴ that a much larger number of meals may be taken when the food consists of particularly delicate insects.— W. L. M.

Economic Ornithology in Recent Entomological Publications.— In "Some notes on the western twelve-spotted . . . cucumber beetles,"⁵ Mr. R. A. Sell notes that "The only birds observed actually eating these insects were the purple finch, the bush-tit, the linnet and the canon wren." The Biological Survey records add to this list: the Pipit, Wren-tit, Tule Wren, Red-shafted Flicker, Steller's Jay, Yellow Warbler, Western Yellow-bellied Flycatcher, Traill's Flycatcher, Brewer's Blackbird, Western Yellow-throat, Lutescent Warbler, Barn Swallow, Russet-backed Thrush, Bullock's Oriole, California Shrike, Valley Quail, Gambel's Quail, Cliff Swallow, California Towhee, Spurred Towhee, Black Phoebe, Vigor's Wren, and Black-headed Grosbeak. Some of these birds feed extensively

¹ Fifth Annual Report of the New Jersey Audubon Society. Oct. 5, 1915. pp. 1-23.

² No. 32, rev. Bureau of Science, 14 pp., Dec. 29, 1915. Birds in Their Economic Relation to Man.

³ Journ. Econ. Biol., Vol. X, No. 3, Sept., 1915, pp. 65-68.

⁴ Yearbook, U. S. Dept. of Agriculture, 1912 (1913) pp. 402-403.

⁵ Journ. of Economic Ent., Vol. 8, No. 6, Dec. 1915, p. 518.

on the beetle (*Diabrotica soror*). From Mr. Sell's account it appears that natural enemies other than birds are negligible.

A few birds that feed upon grasshoppers are mentioned in Harrison E. Smith's report on 'The Grasshopper outbreak in New Mexico, during the summer of 1913.'¹ The irruption described was largely of one species, the long-winged grasshopper (*Dissosteira longipennis*). It extended over about 500 square miles in which area grasses and crops were in great part devastated. "Among the more important bird enemies noted to be feeding upon grasshoppers during this invasion were the Desert Horned Lark (*Otocoris alpestris leucolæma*), Western Meadowlark (*Sturnella neglecta*), Desert Sparrow Hawk (*Falco sparverius phalæna*), Nighthawk (*Chordeiles virginianus*), Killdeer (*Oxyechus vociferus*), and Quail (*Colinus virginianus*)" (pp. 6-7).

A Woodpecker is given high credit as an enemy of a destructive pine moth by Josef Brunner of the Bureau of Entomology."² It is said that: "In most sections of the Rocky Mountains the Rocky Mountain Hairy Woodpecker (*Dryobates villosus monticola*) is unquestionably the most efficient natural force in restraining the Zimmerman pine moth. Thousands of trees are each year regularly infested by the moth in comparatively small areas, and this bird as regularly destroys almost all of the larvæ in all of them during early winter, so that, although hundreds of trees may be examined at a time, it is only on rare occasions that larvæ are found after December in wounds in the trunks of trees which had been infested during the previous summer. This woodpecker seems to have a decided preference for the caterpillar of the pine moth wherever the writer and the entomological rangers assigned to the Northern Rocky Mountain Field Station have had opportunities for observation. In the extreme south-eastern part of Montana, and particularly that portion covered by the Northern Cheyenne Indian Reservation and by the Custer National Forest, the moth has apparently neither bird nor insect enemies. In all other localities this woodpecker is fully able to eliminate this insect as a serious factor in timber destruction. Especially will the work of the bird become effective when the habits of the moth are more generally understood and its "brood trees" are eliminated through use by man."

In recent papers by W. W. Froggatt, Government Entomologist of New South Wales, are some interesting notes on the food of birds. He discusses³ at some length the bird enemies of sheep-maggot flies (*Calliphora* spp.). The Crow (*Corvus coronoides*) is credited with destruction of large numbers of the maggots. Other birds recorded among their enemies are Magpies (*Gymnorhina*) and Soldier-birds and other Honey-eaters (*Meliphagidæ*). The writer adds a word of caution against indiscriminate spread of the Starling.

¹ Bull. No. 293, U. S. Dept. of Agr., 12 pp., 2 figs., Oct. 7, 1915.

² Bull. No. 295, U. S. Dept. of Agr., Oct. 28, 1915, p. 6.

³ Farmers' Bull. No. 95, Dept. of Agr., N. S. Wales, March, 1915, pp. 39-41.

In an article on 'Pests and disease of the cocoanut palm'¹ the same author notes that a small cockatoo of the Solomon Islands, which from the description is *Cacatua ducorpsi* (fide Alex Wetmore), does a great deal of damage by gnawing holes in small green cocoanuts.—W. L. M.

The Ornithological Journals.

Bird-Lore. XVII, No. 6. November–December, 1915.

The Behavior of the Least Bittern. By Arthur A. Allen.—Excellent illustrations from photographs.

A Family of North Dakota Marsh Hawks. By Florence M. Bailey.

Grouse Camp-Mates. By Roy C. Andrews.—Spruce Grouse in the Adirondacks.

The Nuthatches are the subject of the colored plate, with notes on migration and plumage of the several species.

The Educational Leaflet, by T. G. Pearson, treats of the Surf Scoter.

In the Audubon Society department there is a well illustrated article 'Cruising the Klamath.'

Bird-Lore. XVIII, No. 1. January–February, 1916.

Some Canadian Grouse. By H. H. Pittman.

The Chickadees are figured in the colored plate and their migration and plumage discussed.

Bird-Lore's Sixteenth Christmas Census covers 25 pages.

Educational Leaflet, The Shoveller. By T. G. Pearson.

The Condor. XVII, No. 6. November–December, 1915.

The Yellow-billed Loon, a Problem in Migration. By W. W. Cooke.

Notes on the Nesting of the White-tailed Ptarmigan in Colorado. By W. C. Bradbury.

Characteristic Birds of the Dakota Prairies. II. Along the Lake Borders. By Florence Merriam Bailey.

A Convenient Collecting Gun. By L. H. Miller.

Further Remarks on the Kern Red-wing. By J. Mailliard.

Nesting of the White-tailed Kite at Sespe, Ventura County, California. By Lawrence Peyton.

Additional Observations on the Birds of the Lower Colorado Valley in California. By A. B. Howell and A. Van Rossem.

The Condor. XVIII, No. 1. January–February, 1916.

Philadelphia to the Coast in Early Days, and the Development of Western Ornithology Prior to 1850. By Witmer Stone.

Characteristic Birds of the Dakota Prairies. III. Among the Sloughs and Marshes. By Florence Merriam Bailey.

New and Interesting Bird Records from Oregon. By S. G. Jewett.

¹ Science Bull. No. 2, Dept. Agr. N. S. Wales, 3d Ed., July 1914, p. 54.